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REMARKS/ARGUMENTS

In the Office action dated September 7, 2006, claims 1 – 22 were rejected. In response, Applicants have amended claims 1, 9, 15, 19, and 21. Applicants hereby request reconsideration of the application in view of the amended claims and the below-provided remarks.

Claims 1 – 22 were rejected under 35 U.S.C. 102(e) as being anticipated by Tucker et al. (U.S. Pat. No. 7,027,743, hereinafter Tucker).

Claim 1

Claim 1 has been amended to particularly point out the "open-loop" nature of the claimed synchronization method. In particular, claim 1 has been amended to recite that the synchronization signal is derived in an "open-loop manner from a portion of said local oscillator signal that has not optically interacted with said tunable device." That is, tracking of a swept local oscillator signal does not rely on feedback from optical interaction between the local oscillator signal and the tunable device. Support for this amendment is found, for example, at paragraphs [006], [0026], and Fig. 1 of Applicants' specification. As amended, claim 1 recites:

> "A method for synchronizing an operating characteristic of a tunable device with the wavelength of a local oscillator signal comprising:
> sweeping the wavelength of said local oscillator signal across a range of wavelengths;
> generating a synchronization signal as said local oscillator signal is swept across said range of wavelengths; and
> adjusting the operating characteristic of a tunable device in response to said synchronization signal;
> ***wherein said synchronization signal is derived in an open-loop manner from a portion of said local oscillator signal that has not optically interacted with said tunable device.***"
> (emphasis added)

As stated above, claim 1 is rejected as being anticipated by Tucker. Tucker discloses a "closed-loop" technique for synchronizing an optical pre-selector with a swept local oscillator signal. The technique disclosed by Tucker requires a portion of the swept local oscillator signal to optically interact with the optical pre-selector. At col. 2, lines 9 – 17, Tucker discloses:

> "The method and system for ensuring that the tunable optical pre-selector accurately tracks the frequency of the swept local oscillator signal involves adjusting the optical pre-selector…in response to a measure of a portion of the swept local oscillator signal after the portion of the swept local oscillator signal has optically interacted with the optical pre-selector." (emphasis added)

The fact that the synchronization technique of Tucker relies on optical interaction between the swept local oscillator signal and the optical pre-selector is described in detail with reference to Figs. 5 – 19. For example, referring to Fig. 5 of Tucker, the local oscillator signal (506) travels from the local oscillator source (505) to the optical combining unit (510), to the optical pre-selector (514), and then to the coupler (538), where a portion of the local oscillator signal is tapped off to the controller (530). The tapped off portion of the local oscillator signal is used by the controller (530) to generate the synchronization signal that controls the optical pre-selector (514).

In contrast to Tucker, the method of claim 1 does not rely on optical interaction between the local oscillator signal and the tunable device to derive a synchronization signal. In fact, claim 1 expressly states that the synchronization signal is generated without optical interaction between the local oscillator signal and the tunable device. An advantage provided by the "open-loop" synchronization method of claim 1 over prior art "closed-loop" methods is that a portion of the local oscillator signal does not have to be applied to the tunable device to achieve accurate synchronization. Specifically, paragraph [006] of Applicants' specification discloses:

> "Synchronizing an operating characteristic of a tunable device with the wavelength of a swept local oscillator signal using synchronization signals enables accurate tracking of a swept local oscillator signal in an "open-loop" manner as opposed to other "closed-loop" synchronization techniques that require a portion of the local oscillator signal to be applied to the tunable device during wavelength tracking."

Because Tucker discloses a closed-loop synchronization technique that requires optical interaction between a local oscillator signal and an optical pre-selector while claim 1 recites an open-loop synchronization method that derives a synchronization signal "from a portion of a local oscillator signal ***that has not optically interacted*** with said tunable device," Applicants assert that claim 1 is not anticipated by Tucker.

Claim 2

Claim 2 recites:

> "The method of claim 1 including an initial step of ***setting*** the operating characteristic of said tunable device ***and*** the wavelength of said local oscillator signal ***to match each other before*** the wavelength of said local oscillator signal ***is swept*** across a range of wavelengths." (emphasis added)

The Office action states that the limitations of claim 2 are disclosed by Tucker at col. 11, lines 24 – 35. Applicants have reviewed the referenced citation and assert that the limitations of claim 2 are not disclosed in the referenced citation. At col. 11, lines 24 – 35, Tucker discloses:

> "The frequency tracking system of Fig. 9 involves modulating (also referred to as dithering) the center frequency of the optical pre-selector passband so that the intensity of the tapped optical signal received by the controller can be compared to the frequency of the swept local oscillator signal, ($<_{LO}$), as shown in Fig. 10. Dithering of the optical pre-selector can be accomplished by modulating the drive voltage applied to the optical pre-selector. As described above with reference to Fig. 6, the high point in the intensity versus optical frequency curve 1002 indicates the actual center frequency (or passband) of the optical pre-selector." (emphasis added)

Applicants assert that "modulating the center frequency of the optical pre-selector passband so that the intensity of the tapped optical signal received by the controller can be compared to the frequency of the swept local oscillator signal" does not disclose "***setting*** the operating characteristic of said tunable device ***and*** the wavelength of said local oscillator signal ***to match each other before*** the wavelength of said local oscillator signal ***is swept*** across a range of wavelengths" as recited in claim 2. In particular, the citation of Tucker makes no mention of ***matching*** the operating parameter of the optical pre-selector and the wavelength of the local oscillator ***before*** the local oscillator signal is swept. In view of the foregoing remarks, Applicants assert that claim 2 is not anticipated by Tucker.

Claim 5

Claim 5 recites:

> "The method of claim 1 wherein N discrete synchronization signals are generated ***at wavelength-dependent intervals***." (emphasis added)

The Office action states that the limitations of claim 5 are disclosed by the "frequency counter 1932 of Fig. 19" of Tucker. No additional support for the rejection is provided. Applicants assert that nowhere in Fig. 19, nor anywhere else, does Tucker disclose N discrete synchronization signals that are "generated ***at wavelength-dependent intervals***" as recited in claim 5. In view of the foregoing remarks, Applicants assert that claim 5 is not anticipated by Tucker.

Claim 6

Claim 6 recites:

> "The method of claim 5 wherein said wavelength-dependent intervals are ***defined by*** $(wavelength_2 - wavelength_1)/N$." (emphasis added)

The Office action states that the limitations of claim 6 are disclosed by the "frequency counter 1932 of Fig. 19" of Tucker. No additional support for the rejection is provided. Applicants assert that nowhere in Fig. 19, nor anywhere else, does Tucker disclose wavelength-dependent intervals that are "***defined by*** $(wavelength_2 - wavelength_1)/N$" as recited in claim 6. In view of the foregoing remarks, Applicants assert that claim 6 is not anticipated by Tucker.

Claims 9, 15, 19, and 21

Claims 9, 15, 19, and 21 have been amended to include limitations similar to the limitations that were added to claim 1. Because of the similarities between amended claims 9, 15, 19, and 21 and amended claim 1, Applicants assert that the remarks provided above with reference to amended claim 1 apply also to amended claims 9, 15, 19, and 21.

Claims 10, 20, and 22

Claims 10, 20, and 22 include similar limitations to claim 2. Because of the similarities between amended claims 10, 20, and 22 and claim 2, Applicants assert that the remarks provided above with reference to claim 2 apply also to claims 10, 20, and 22.

Claim 17

Claim 17 includes similar limitations to claim 5. Because of the similarities between claim 17 and claim 5, Applicants assert that the remarks provided above with reference to claim 5 apply also to claim 17.

Dependent claims 2 – 8, 10 – 18, 20, and 22

Claims 2 – 8 are dependent on claim 1, claims 10 – 18 are dependent on claim 9, claim 20 is dependent on claim 19, and claim 22 is dependent on claim 21. Applicants assert that in addition to the specific remarks provided above, these claims are allowable at least based upon an allowable independent claim.

Request for Reconsideration Pursuant to 37 C.F.R. 1.111

Having responded to each and every ground for objection and rejection in the Office action mailed September 7, 2006, Applicants request reconsideration of the instant application pursuant to 37 C.F.R. 1.111 in view of the remarks made herein. A notice of allowance is earnestly solicited.

Respectfully submitted,
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Date: November 27, 2006

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